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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,891

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Iakovos Sigalas

930092-2010

2008

7590 05/14/2008  
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EXAMINER

PARVINI, PEGAH

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

05/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,891	<b>Applicant(s)</b> SIGALAS ET AL.	
	<b>Examiner</b> PEGAH PARVINI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 8-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/27/05</u> .   | 6) <input type="checkbox"/> Other: _____                          |



## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of claims 1-7 in the reply filed on April 16, 2008 is acknowledged.

Applicants didn't indicate whether said election was made with or without traverse and no argument was presented; thus, the election is considered as an election without traverse. It is noted that the applicant is required to specifically point out the reasons on which he or she bases his or her conclusions that a requirement to restrict is in error. A mere broad allegation that the requirement is in error does not comply with the requirement of 37 CFR § 1.111. Thus the required provisional election (see MPEP § 818.03(b)) becomes an election without traverse. See MPEP § 818.03(a).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,525,178 to Hall.

Regarding claims 1, 5 and 6, Hall teaches composite material which includes a mixture of individual diamond crystals and pieces of precemented carbide of a metal

such as tungsten wherein the precemented carbide masses are dispersed within the composite polycrystalline body; the reference, further, disclose the existence of a binder in such as mixture (Abstract; column 3, lines 1-17; column 4, lines 56-58). Furthermore, Hall discloses that the composite polycrystalline body comprises polycrystalline diamond formed in the presence of pieces of precemented carbide at high pressures and temperatures (column 3, lines 5-9); therefore, the mixture is fired. Thus, it is obvious to one of ordinary skill in the art that the mixture of Hall is in a green state before being fired motivated by the fact that Hall, further, discloses mixing powder of diamond with precemented tungsten carbide and a binder, and finally, heating it under pressure and at very high temperature to form the final polycrystalline composite body (Examples 1-5). Further, the reference, in one of the embodiments, discloses that the composite body obtained is a mass of cemented tungsten carbide with pockets of polycrystalline diamond within it (Example 5). The intermediate product of the reference can be used to reject the instant claims.

Additionally, Hall teaches that the resulting polycrystalline diamond body exhibits excellent wear characteristics and impact resistance (Abstract; column 2, lines 49-52). Moreover, Hall discloses that precemented carbide pieces provide hard surfaces against which the diamond crystals can be pressed (column 5, lines 33-38).

Regarding claim 4, Hall discloses that generally a catalyst/binder material is used to ensure intercrystalline bonding in the claimed polycrystalline diamond wherein the presence of precemented carbide contributes the toughness of the final composite formed (column 1, lines 10-26). Additionally, as detailed above for claim 1, Hall teaches

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making a polycrystalline body having improved resistance by mixing binder, diamond powder, and precemented tungsten carbide, then heating it under pressure and at very high temperature (Examples 1-5).

With reference to a second phase, it is noted that since the presence of such a second phase is claimed to be optional, Hall is seen to read on the limitation of claim 4 as well.

Regarding claim 7, Hall, as detailed above, discloses that precemented carbide pieces of spherical shapes are distributed throughout a polycrystalline diamond matrix (column 6, lines 18-22). Hall, further, discloses that shapes and sizes of the pieces of precemented carbide used to produce the composite body of the present invention may be varied to suit particular applications (column 3, lines 23-26).

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hall as applied to claim 1 above, and further in view of US Patent No. 4,866,885 to Dodsworth.

Regarding claims 2 and 3, Hall teaches a polycrystalline composite body which is formed after heating a mixture of diamond powder, binder, and precemented carbide of metals such as tungsten under pressure.

Hall, although uses a binder, is silent to the use of organic binder, such as cellulose ones. Dodsworth, drawn to composite abrasive compact formed by placing abrasive material on a cemented carbide substrate in addition to organic binders which is then heated under pressure to form bonded ultra-hard abrasive particles, disclose the

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use of cellulose binders as the organic binder used to binds the particulate components, which are polycrystalline diamond or cubic boron nitride particles and a coherent hard conglomerate, to form the final ultra-hard composite material (Abstract; column1, lines 5-17; column 2, lines 24-50).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Hall in order to utilize an organic binder such as cellulose binders as that taught by Dodsworth motivated by the fact that the organic binders bind the particulate components enabling the components to be deposited in any form (column 2, lines 35-37). Furthermore, the combination is motivated by the fact that the two references are from the relevant field of art.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 4,960,643 to Lemelson.

US Patent No. 5,584,045 to Tanabe et al.

US Patent No. 5,441,817 to Rai et al.

US Patent No. 5,326,380 to Yao et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. P./  
Examiner, Art Unit 1793

/Michael A Marcheschi/  
Primary Examiner, Art Unit 1793